

## CLAIMS

### WE CLAIM:

1. An in-plane component adapter used with a terminal block of a type mountable at a rear surface on a laterally extending rail to present a substantially constant lateral thickness between left and right planar walls that may abut corresponding planar walls of adjacent terminal blocks mounted on the rail, the  
5 terminal block providing a plurality of terminals accessible at upper and lower edges of the terminal block for receiving electrical conductors communicating electrical signals to a socket of the terminal block, the socket for receiving a relay having relay pins insertable into the socket from a front surface of the terminal block, the component adapter comprising:  
10       an insulating housing having a width substantially equal to the lateral thickness of the terminal block;  
          at least one component within the insulating housing having terminals;  
          at least one conductive pin having a first end extending from a rear surface of the housing and receivable by the terminal block, having a portion within the  
15 housing to selectively attach to terminals of the component, and having a second end receiving a conductor at a front surface of the housing; and  
          wherein the housing may be attached to the terminal block so that the housing lies substantially between planes of the left and right planar walls of the terminal block.
2. The in-plane component adapter of claim 1 wherein the housing is sized to engage portions of the terminal block assembly to stabilize the housing against twisting.
3. The in-plane component adapter of claim 1 wherein the housing includes a door allowing access to the contained component.
4. The in-plane component adapter of claim 1 wherein the component is a fuse having two terminals joined by a fusible link.

5. The in-plane component adapter of claim 4 wherein the housing includes a socket releasably holding the terminals of the fuse.

6. The in-plane component adapter of claim 1 wherein the component is a voltage spike suppressor selected from the group consisting of flyback diodes, zener diodes, MOV devices, capacitors, inductors, and resistors.

7. The in-plane component adapter of claim 1 wherein the component is a timer circuit.

8. An in-plane component adapter used with a terminal block of a type mountable at a rear surface on a laterally extending rail to present a substantially constant lateral thickness between left and right planar walls that may abut corresponding planar walls of adjacent terminal blocks mounted on the rail, the  
5 terminal block further providing a plurality of terminals accessible at upper and lower edges of the terminal block for receiving electrical conductors communicating electrical signals to a relay of the terminal block, and providing a terminal block socket for receiving a relay having relay pins insertable into the terminal block socket from a front surface, the component adapter comprising:  
10 an insulating housing;  
a component within the insulating housing having terminals;  
conductive pins collectively having: first ends extending from a rear surface of the housing and receivable by the socket, portions within the housing attached to terminals of the component, and second ends terminating in housing receptacles  
15 receiving the relay pins of a relay at a front surface of the housing; and  
wherein when the conductive pins are received by the terminal block socket, the housing lies substantially between planes of the left and right planar walls of the terminal block.

9. The in-plane fuse adapter of claim 8 wherein the housing includes stabilizing arms extending outward from the front surface of the housing to flank opposed surfaces of the relay when the relay pins are inserted into the housing socket.

10. The in-plane component adapter of claim 1 wherein the stabilizing arms include detents resisting the removal of the relay from the housing socket.

11. The in-plane fuse adapter of claim 1 wherein the housing include upper and lower surfaces that abut corresponding surfaces of the terminal block to resist torsion of the fuse adapter with respect to the terminal block when the housing is inserted into the terminal block socket.

12. The in-plane component adapter of claim 1 wherein the electrical component is a fuse.

13. The in-plane component adapter of claim 12 wherein the housing includes a fuse socket for releasably attaching selected conductive pins to the fuse.

14. The in-plane fuse adapter of claim 13 wherein the housing includes an opening providing access to the fuse socket.

15. The in-plane component adapter of claim 8 wherein the component is a voltage spike suppressor connected across pins communicating a coil of the relay when the relay pins are received by the housing receptacles.

16. The in-plane component adapter of claim 8 wherein the component is a timer circuit independently controlling a time of actuation of a coil of a relay communicating with the conductive pins of the housing.

17. The in-plane fuse adapter of claim 8 wherein the housing has a substantially constant lateral thickness of substantially from 5 to 8 mm.

18. A terminal block relay assembly comprising:  
a terminal block housing having a rear surface including a channel allowing the housing to be mounted on a laterally extending rail to present a substantially constant lateral thickness between left and right planar walls that may abut  
5 corresponding planar walls of adjacent terminal blocks mounted on the rail;

a plurality of terminals accessible at upper and lower edges of the terminal block housing for receiving electrical conductors communicating electrical signals to a relay held by the terminal block housing;

an in-plane fuse adapter including:

- 10 (a) an insulating adapter housing having a width substantially equal to the lateral thickness of the terminal block housing;
- (b) at least one component within the adapter housing having terminals;
- (c) at least one conductive pin having a first end extending from a rear surface of the adapter housing and receivable by the terminal block housing, having
- 15 a portion within the adapter housing to selectively attach to terminals of the component and having a second end receiving a conductor at a front surface of the adapter housing; and

wherein the adapter housing may be attached to the terminal block housing so that the adapter housing lies substantially between planes of the left and right

20 planar walls of the terminal block housing.

19. The terminal block relay assembly of claim 18 wherein the adapter housing is sized to engage portions of the terminal block housing assembly to stabilize the adapter housing against twisting.

20. The terminal block relay assembly of claim 18 wherein the adapter housing includes a door allowing access to the contained component.

21. The terminal block relay assembly of claim 18 wherein the component is a fuse having two terminals joined by a fusible link.

22. The terminal block relay assembly of claim 21 wherein the adapter housing includes a socket releasably holding the terminals of the fuse.

23. The terminal block relay assembly of claim 18 wherein the component is a voltage spike suppressor selected from the group consisting of flyback diodes, zener diodes, MOV devices, capacitors, inductors, and resistors.

24. The terminal block relay assembly of claim 18 wherein the component is a timer circuit.

25. A terminal block relay assembly comprising:

a terminal block housing having a rear surface including a channel allowing the housing to be mounted on a laterally extending rail to present a substantially constant lateral thickness between left and right planar walls that may abut

5 corresponding planar walls of adjacent terminal blocks mounted on the rail;

a plurality of terminals accessible at upper and lower edges of the terminal block housing for receiving electrical conductors communicating electrical signals to a relay held by the terminal block housing;

10 a terminal block socket for receiving a relay having relay pins insertable into the terminal block socket from a front surface of the terminal block housing;

an in-plane fuse adapter including:

(a) an insulating adapter housing;

(b) a component within the adapter housing having terminals;

15 (c) conductive pins collectively having: first ends extending from a rear surface of the adapter housing and receivable by the terminal block socket, portions within the adapter housing attached to terminals of the component, and housing receptacles receiving the relay pins of a relay at a front surface of the housing; and

20 wherein when the conductive pins are received by the terminal block socket, the housing lies substantially between planes of the left and right planar walls of the terminal block housing.

26. The terminal block relay assembly of claim 25 wherein the adapter housing includes stabilizing arms extending outward from the front surface of the adapter housing to flank opposed surfaces of the relay when the relay pins are inserted into the housing socket.

27. The terminal block relay assembly of claim 25 wherein the stabilizing arms include detents resisting the removal of the relay from the housing socket.

28. The terminal block relay assembly of claim 25 wherein the adapter housing include upper and lower surfaces that abut corresponding surfaces of the terminal block housing to resist torsion of the fuse adapter with respect to the terminal block housing when the adapter housing is inserted into the terminal block housing.

29. The terminal block relay assembly of claim 25 wherein the electrical component is a fuse.

30. The terminal block relay assembly of claim 29 wherein the adapter housing includes a fuse socket for releasably attaching selected conductive pins to the fuse.

32. The terminal block relay assembly of claim 30 wherein the adapter housing includes an opening providing access to the fuse socket.

33. The terminal block relay assembly of claim 25 wherein the component is a voltage spike suppressor connected across pins communicating a coil of the relay when the relay pins are received by the housing receptacles.

34. The terminal block relay assembly of claim 25 wherein the component is a timer circuit independently controlling a time of actuation of a coil of a relay communicating with the conductive pins of the adapter housing.

35. The terminal block relay assembly of claim 25 wherein the adapter housing has a substantially constant lateral thickness of substantially from 5 to 8 mm.